PATENT

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In Re Application No. 09/382,438	For:	METHOD AND APPARATUS USING A MULTI-CARRIER FORWARD LINK IN A WIRELESS COMMUNICATION SYSTEM
GARDNER et al.		
Examiner: DANIEL J. RYMAN		
Filed: 08/25/1999	Group No. 2665	

APPELLANTS' BRIEF
37 CFR § 1.192

Mail Stop Appeal Brief
Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450
Attention: Examiner Daniel J. Ryman

Dear Commissioner:

In response to the Advisory Action dated 09/09/2003 Appellants hereby submit the below response.

CERTIFICATE OF MAILING/TRANSMISSION (37 CFR 1.8(a))

I hereby certify that this correspondence is, on the date shown below, being:

MAILING

☒ deposited with the United States Postal Service with sufficient postage as first class mail, in an envelope addressed to the Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450.

Depositor's Name: Christine Hughey
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Date: 10/08/2003

Signature: Christine Hughey

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REAL PARTY IN INTEREST

The real party in interest is Qualcomm, Incorporated, assignee of the present application.

RELATED APPEALS AND INTERFERENCES

There are no related appeals and interferences.

STATUS OF CLAIMS

Claims 10-28 are pending in this Application. Claims 10-22 stand rejected under 35 USC §103(a) as being unpatentable over Tiedemann Jr. (US Patent Number 5,604,730) in view of Proctor (US Patent Number 6,222,832) in further view of Walton Jr., et al. (US Patent Number 5,621,723). Claims 23-28 under 35 U.S.C. § 103(a) as being unpatentable over Tiedemann (USPN '730) in view of Proctor (USPN '832) further in view of Walton, Jr. (USPN '723), and further in view of additional previously noted prior art.

Appellants appeal the rejections of claims 10-28.

STATUS OF AMENDMENTS

A Response After Final Rejection was submitted on August 14, 2003, subsequent to the final rejection dated June 27, 2003.

SUMMARY OF THE INVENTION

As stated in the Background section of the originally filed specification, at the time of the present invention, systems and proposals for Third Generation. Systems the bandwidth allocated to reverse link transmissions is the same as the bandwidth allocated for forward link transmissions. With reference to the Summary of the Invention, page 7, lines 5-17, the present invention provides a method for spectrum management which allows the bandwidth used in the forward link to vary from the bandwidth in the reverse link.

In one embodiment, a single carrier reverse link is used in conjunction with a multiple-carrier forward link. For example, in a 3X system, the forward link may be three times the bandwidth of the reverse link.

In one embodiment, the present invention provides a method wherein a single cdma2000 1X reverse link (1X RL) is used in conjunction with a cdma2000 3X (3X FL). For example, the 3X FL has three carriers and the 1X RL has one carrier. The 3X FL carriers may occupy adjacent "frequency bins," wherein according to one embodiment, the 1X RL carrier may be the center frequency bin. Alternate embodiments may locate the 1X RL at any of the frequency bins. Note that a 3X FL carrier may use one or more carriers with a chip rate greater than the chip rate of a 1X RL carrier.

Appellants refer to FIG. 2 illustrating the allocation of three carriers on the forward link. The associated reverse link may have only one carrier assigned. As illustrated, the bandwidth of the forward link is allocated differently from the bandwidth of the reverse link. In this way, spectrum management optimizes the use of multi-carriers available in a system such as a 3X system.

ISSUE

I. Whether claims 10-22 are patentable over Tiedemann in view of Proctor further in view of Walton.

II. Whether claims 23-28 are patentable over Tiedemann in view of Proctor further in view of Walton and further in view of additional previously noted prior art.

GROUPING OF CLAIMS

All claims stand or fall together.

ARGUMENT

Issue I: Claims 10-22

The Examiner has rejected the above appealed claims as unpatentable over Tiedemann in view of Proctor further in view of Walton. To establish a *prima facie* case of obviousness three basic criteria must be met. The prior art reference(s) must teach or suggest all the claim limitations. There must be some suggestion or motivation, either in the references themselves or in the knowledge generally available to one of ordinary skill in the art, to modify the reference or to combine the reference teachings. In addition, there must be a reasonable expectation of success.

Appellants respectfully submit that the Examiner has failed to make a *prima facie* case of obviousness as required above. The references cited by the Examiner do not teach or suggest all of the claims limitations, nor do these references provide a suggestion or motivation to modify or combine the reference teachings. Therefore, there is no reasonable expectation of success for such proposed modification or combination.

Appellants respectfully submit that the cited references do not teach or suggest each and every limitation of the claims. With respect to claim 10, the pending claim recites:

> Claim 10. A method in a wireless communication system, comprising:
> designating a multi-carrier forward link having a plurality of forward link frequency bins; and
> designating a reverse link having at least one reverse link frequency bin,
> wherein the forward link frequency bins and the reverse link frequency bin are designated such that bandwidth of the forward link can be allocated differently from bandwidth of the reverse link.

The cited references do not teach "designating a multi-carrier forward link having a plurality of frequency bins." Appellants refer to FIG. 2 of the present Application for Patent, wherein in one embodiment the forward link has three carriers allocated, while the reverse link has one carrier allocated.

The Examiner cites Tiedemann, FIG. 7 and col. 4, ll. 53-61, and further col. 5, ll. 16-26 as teaching this limitation of the claim. While Appellants agree that Tiedemann teaches a wireless communication system, wherein the base station communicates with the mobile radio over the forward channel and the mobile radios communicate with the base station over the reverse channel. See col. 4, lines 55-57. Tiedemann then details the format of one such channel. See col. 5, lines 16-26. While such details may be applicable to other systems, such as a 3X system, this section does not extend to teach the use of multiple carriers, i.e., multiple frequency bins, for a single forward link as recited in the claim. Tiedemann does teach or disclose a system designating a multi-carrier forward link having a plurality of frequency bins.

The Examiner cites Proctor as defining a frequency bin as 1.25MHz band class. While Appellants agree that Proctor teaches such a band class, Appellants assert that Proctor merely teaches allocation of a single carrier, i.e., frequency bin, to a forward link. Specifically, Proctor teaches bandwidth allocation wherein a transceiver may be tuned on command to any carrier within a larger bandwidth. See col. 6, lines 52-56. Proctor, however, does not teach or even suggest the use of multiple carriers or multiple frequency bins to a forward link. Proctor does not teach or even suggest a system wherein the number of carriers used for the forward link is different from the number of carriers used for the reverse link.

Further, Appellants respectfully disagree with the Examiner's characterization of Walton as teaching the designation of multiple forward link frequency bins and reverse link frequency bin(s) such that bandwidth of the forward link is allocated differently from the reverse link. Walton, however, does not teach or even suggest allocation of multiple carriers for the forward link. Walton teaches a method of accommodating asymmetric traffic requirements by allocating time slots to data transmissions on the reverse link. In other words, the reverse link uses different time slots to implement data rates. See col. 5, ll. 37-53. The Examiner cites col. 4, ll. 48-67, wherein each forward packet data channel is associated with one or more reverse packet data channels. However, a packet data channel is defined by a code assignment, i.e., is a code channel. See col. 3, ll. 32-34. A code channel is not a carrier, i.e., frequency bin, as recited in claim 10. Rather, in Walton a carrier is allocated to each link, and then code channels are

assigned which are spread over that carrier. While Walton teaches each forward link packet data channel having multiple packet data channels for a reverse link associated therewith, Walton does not teach or even suggest a multi-carrier forward link.

In the Advisory Action of September 9, 2003, the Examiner states that "Walton, by using words such as 'for example' and 'may', leaves open the possibility that the teaching could be applied to other systems, such as a multicarrier system." Assuming arguendo that such *possible* extensions were reasonable, Walton does not teach carrier allocation, but merely teaches packet data channel (code channel) assignments for efficient data rates within a single carrier. Therefore, application of the teaching of Walton to a multi-carrier system would not result in Appellants' claimed invention.

None of the cited prior art references teaches or even suggests a method of bandwidth allocation which allows the bandwidth used in the forward link to vary from the bandwidth used in the reverse link. None of the cited prior art references teaches or even suggests a multi-carrier forward link. The Examiner is applying hand-sight having seen Appellants' invention; such application of hindsight is impermissible.

The references cited by the Examiner fail to provide a suggestion or motivation to one of ordinary skill in the art to modify the references or to combine the reference teachings. Appellants submit that the Examiner is using impermissible hindsight after presentation of the present Application for Patent to suggest a combination of such references.

As the cited references do not teach each and every limitation of the pending claims, the cited references may not be combined or modified so as to result in Applicants' claimed invention without use of Appellants originally filed application. Tiedemann does not teach designating a multi-carrier forward link. Proctor does not teach a multi-carrier forward link, but rather teaches a frequency bin. Walton does not teach allocating forward link bandwidth differently from the reverse link. Therefore, a combination of these references cannot result in Appellants' claimed invention.

Issue II: Claims 23-28

The Examiner has rejected the above appealed claims as being unpatentable over Tiedemann (USPN '730) in view of Proctor (USPN '832) further in view of Walton, Jr. (USPN '723), and further in view of Appellants' admitted prior art.

The arguments provided hereinabove are also applicable to these claims which depend on claim 10.

Conclusion

Appellants respectfully submit that the Examiner has inappropriately rejected the pending claims on prior art references that do not support a 35 U.S.C. §103(a) rejection. Appellants further respectfully submit that the present Application and the claims appealed are patentable over the prior art of record.

Respectfully submitted,

Dated: 10/08/2003

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APPENDIX

CLAIMS AS PENDING

Claims 1-9 (canceled)

Claim 10. A method in a wireless communication system, comprising:

designating a multi-carrier forward link having a plurality of forward link frequency bins; and

designating a reverse link having at least one reverse link frequency bin,

wherein the forward link frequency bins and the reverse link frequency bin are designated such that bandwidth of the forward link can be allocated differently from bandwidth of the reverse link.

Claim 11. The method of claim 10 further comprising:

selecting a first forward link frequency bin from the plurality of forward link frequency bins for forward link transmission, the first forward link frequency bin having an associated first reverse link frequency bin; and

selecting a second reverse link frequency bin for reverse link transmission corresponding to the forward link transmission wherein the second reverse link frequency bin is different from the first reverse link frequency bin.

Claim 12. The method of claim 11 wherein the selecting a second reverse link frequency bin is based on loading of the system.

Claim 13. The method of claim 11, further comprising:

selecting a third reverse link frequency bin for reverse link transmission corresponding to the forward link transmission, wherein the third reverse link frequency bin is different from the first and second reverse link frequency bins.

Claim 14. The method in accordance with claim 10, wherein said plurality of forward link frequency bins comprise three frequency bins.

Claim 15. The method in accordance with claim 10, wherein said plurality of forward link frequency bins are adjacent frequency bins.

Claim 16. The method in accordance with claim 11, wherein said multi-carrier forward link is adapted for transmission of a plurality of code channels, wherein one of said plurality of code channels is used to communicate power control information for said second reverse link frequency bin.

Claim 17. A method of allocating bandwidth for forward and reverse link transmissions in a wireless communication system, comprising:

receiving communications on a multi-carrier forward link, the multi-carrier forward link having a plurality of forward link frequency bins, the reverse link having at least one frequency bin,

wherein the forward link and reverse link frequency bins are configured such that the allocation of bandwidth for the forward and reverse link transmissions can be varied.

Claim 18. The method of claim 17, further comprising:

receiving by a first device a communication on a forward link frequency bin, the forward link frequency bin having an associated first reverse link frequency bin; and

transmitting by a second device via a second reverse link frequency bin, wherein said second reverse link frequency bin is different from the first reverse link frequency bin.

Claim 19. The method as in claim 18, further comprising:

receiving by the first device an indication of a reverse link frequency bin.

Claim 20. An apparatus in a wireless communication system, comprising:

a first means for transmitting information on a multi-carrier forward link, wherein said multi-carrier forward link comprises a plurality of forward link frequency bins; and

a second means for designating a reverse link frequency bin, wherein said first and second means configure the frequency bins so as to enable differential allocation of bandwidth for forward link and reverse link transmissions.

Claim 21. The apparatus of claim 20, further comprising:

means for selecting a first forward link frequency bin from the plurality of forward link frequency bins for the forward link transmission, the first forward link frequency bin having an associated first reverse link frequency bins; and

means for selecting a second reverse link frequency bin for the reverse link transmission corresponding to the forward link transmission, wherein the second reverse link frequency bin is different from the first reverse link frequency bin.

Claim 22. The method of claim 10, wherein the designations of the forward and reverse link includes allocating more bandwidth for the forward link than the reverse link.

Claim 23. The method of claim 10, wherein the designation of the forward link includes configuring the forward link as a cdma2000 3X forward link.

Claim 24. The method of claim 23, wherein the forward link includes first, second, and third carriers.

Claim 25. The method of claim 24, wherein said first, second, and third carriers occupy first, second, and third adjacent frequency bins, respectively.

Claim 26. The method of claim 25, wherein the designation of the reverse link includes configuring the reverse link as a cdma2000 1X reverse link.

Claim 27. The method of claim 26, wherein the reverse link includes a fourth carrier.

Claim 28. The method of claim 27, wherein the fourth carrier is located in a frequency range substantially similar to the second frequency bin.

PATENT

AF/44

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In Re Application of: GARDNER et al.
Application No.: 09/382,438 Filed: 08/25/1999
For: METHOD AND APPARATUS USING A MULTI-CARRIER FORWARD LINK IN A WIRELESS COMMUNICATION SYSTEM

Mail Stop Appeal Brief
Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

Dear Sir:

Transmitted herewith for filing is an Appeal Brief in triplicate in the above identified application.

- [ ] Applicant is a small entity - a verified statement
  - [ ] is enclosed.
  - [ ] has already been filed.

In addition to the Appeal Brief, the following documents are enclosed:

- [X] Appendix A (claims as appealed)
- [ ] Appendix B
- [ ] Appendix C

- [ ] Fee check in the amount of $____ is enclosed to pay for any claim and/or extension fees.
- [X] Please charge Deposit Account No. 17 - 0026 of QUALCOMM, Incorporated in the amount of $ 330.00. The Commissioner is hereby authorized to charge payment of any additional fees which may be required, or credit any overpayment, to said Deposit Account No. 17 - 0026. A duplicate of this sheet is enclosed.

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